REMARKS

Claims 1-54 are pending in the application. Claims 1-54 presently stand rejected. Claims 1, 2, 17, 19-24, 40, 41, 43-52 have been amended. Claims 3-7, 36-39 and 42 have been cancelled without prejudice. New claims 55-66 have been added. The Applicants respectfully request reconsideration of the present application in view of the amendments and the following remarks.

Drawings

The Drawings were objected to by the Draftsperson on Form PTO-948. Specifically, Figures 1-17C were objected to because copy machine marks are not accepted. Corrected drawings have been submitted to the Official Draftsperson in a separate letter.

Objections to the Specification

The specification is objected to by the Examiner. Specifically, the Applicant is reminded of the proper language and format for an abstract of the disclosure. The originally filed abstract has been replaced with a new abstract to address the objection. Accordingly, the Applicants request the Examiner to withdraw the objections to the specification.

35 U.S.C. § 102 Rejections

Originally filed claims 1-54 were rejected under 102(b) as being anticipated by *Yasuda* et al., U.S. Patent Number 4,947,398 (hereinafter *Yasuda*).

A claim is anticipated only if each and every element of the claim is found in a single reference. M.P.E.P § 2131 (citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d

628 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the claim." M.P.E.P. § 2131 (citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1989)).

Claim 1, as presently amended, expressly recites:

1. (Currently Amended) An optical tuning apparatus, comprising:

a first tunable wavelength selection element *configured to define a first plurality of tunable transmission peaks separated by a first adjustable free spectral range*;

a second tunable wavelength selection element *configured to define a second plurality of tunable transmission peaks separated by a second adjustable free spectral range*; and

a controller, operatively coupled to each of the first and second tunable wavelength selection elements, *to adjust the first and second free spectral ranges to produce at least one tunable joint transmission peak, wherein each of said at least one tunable joint transmission peak comprises a respective pair of transmission peaks, one from each of the first and second plurality of tunable transmission peaks, that are aligned, and said at least one tunable transmission peak is tuned using a Vernier tuning effect.* (Emphasis added)

Yasuda is directed to a laser device with wavelength stabilization control. In particular, the laser device is directed toward use in excimer laser-based lithography. The problem to be solved by *Yasuda*'s device is described with reference to Figures 1 and 2a-d. The objective of the excimer laser is to produce a laser output at a single wavelength (the setting wavelength) with a minimum spectral dispersion, as shown in Figure 2d. This is accomplished by employing a coarse tuning etalon 4 and a fine tuning etalon 5. The respective transmission characteristics of the coarse and fine tuning etalons are shown in Figures 2a and 2b. The transmissions graph of Figure 2b shows that the fine tuning etalon 5

produces a plurality of transmission peaks, separated by a free spectral range FSR_2. The transmission graph of Figure 2a shows that the coarse tuning etalon 4 produces a plurality of transmission peaks with substantially wider spacing (FSR_1) and less finesse.

It is clear the *Yasuda* does not employ Vernier tuning, or use tunable wavelength selection elements with adjustable free spectral ranges. Under Vernier tuning the free spectral ranges of the various filter elements are selected or adjusted such that a small change in one or both of the FSRs causes the joint transmission peak to change in wavelength.

Furthermore, *Yasuda* teaches away from using adjustable free spectral ranges for tuning. Rather, *Yasuda* employs techniques for maintaining FSR_1 and FSR_2 in view of FSR changes caused by heating of etalons 4 and 5 from the laser. This problem is illustrated in Figures 3a-c. The heating of the etalons causes the FSR_1 and FSR_2 to change. If these FSRs were similar, the heating problem would merely cause the wavelength to shift, but would not substantially reduce the laser output unless the shift was large. Unlike communication systems, the wavelength of the excimer laser is not tuned to different wavelengths corresponding to respective channels, but rather the filter elements are tuned to produce an output with a wavelength centered about the gain medium bandwidth characteristics. For example, KrF excimer lasers generate light at a nominal wavelength of 248 nm.

In contrast, the values for FSR_1 and FSR_2 are not similar. This produces a situation under which the wavelength shift $\Delta\lambda 1$ of the course tuning etalon 4 is much greater than the wavelength shift $\Delta\lambda 2$ of the fine tuning etalon 5. To counter this problem, *Yasuda* provides a control scheme that is geared toward maintaining the FSRs of the course and fine-tuning etalons in view of the thermal effects caused by laser light passing through the etalons.

Thus, *Yasuda* fails to disclose, teach or fairly suggest each and every element of amended claim 1. Therefore, the presently claimed invention of amended claim 1 would not be anticipated nor be rendered obvious by *Yasuda*.

Applicants respectfully assert that each of independent claims 19 (directed toward a laser apparatus employing the tuning elements of claim 1), 40 (a method claim for tuning a light beam employing the tuning elements of claim 1), 51 (a method claim for tuning a laser analogous to the laser apparatus of claim 19), 52 (a means plus function version of the laser of claim 19), and 63 (a new independent claim to a laser apparatus) are patentable over the cited art for similar reasons discussed above in support of the patentability of amended claim 1. The other pending claims are dependent claims and distinguish for at least the same reasons as their respective independent base claims in addition to adding further limitations of their own.

Conflicting Claims

The Examiner notes on page 5 of the instant Office Action that claims 1-17, 19-34 and 36-54 of this application conflict with claims 1-28 and 33-36 of Application No. 10/087728 (Attorney Docket P14868C) and claims 88, 89, 91, 92, 97-99 and 101-125 of Application No. 09/626526 (Attorney Docket P14868.) The applications have been amended with the intention to resolve the conflicts.

Conclusion

The Applicants submit that in view of the remarks and amendments set forth herein, all pending claims are in condition for allowance. Therefore, the Applicants respectfully requests the Examiner to issue a Notice of Allowance in this case

Charge Deposit Account

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

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